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# USSR Report

ENERGY

(FOUO 8/81)



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## USSR REPORT

### ENERGY

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ELECTRIC POWER

ELECTRIFICATION OF OIL, GAS INDUSTRY OF WESTERN SIBERIA

Moscow ELEKTRIFIKATSIYA NEFTYANOY I GASOVOY PROMYSHLENNOSTI ZAPADNOY SIBIRI in Russian 1980 (signed to press 25 Nov 80) pp 1-7, 180-182

[Annotation, introduction and table of contents from book "Electrification of the Oil and Gas Industry of Western Siberia", by Yuriy Borisovich Novoselov, Viktor Petrovich Roslyakov and Vitaliy Alekseyevich Shpilevoy, Izdatel'stvo "Nedra", 1,1660 copies, 182 pages]

[Text] This book presents a brief description of power equipment, systems for the control and power supply of drilling apparatus, installations for the extraction and industrial preparation of oil, compressor and pumping stations, oil fields and gas and oil pipelines. It cites calculations and methods of operating the basic electrical equipment, networks, relay protection, grounding and lighting protection based on the specific natural and climatic conditions of western Siberia. It examines questions regarding the operational reliability of electrical equipment and provides recommendations for improving reliability. It broadly reflects the experience gained in the development, introduction and operation of electrical equipment in the oil and gas industry of western Siberia.

This book is intended for engineering and technical workers in enterprises of the oil and gas industry of western Siberia and can be useful for all specialists engaged in questions regarding the electrification of the oil and gas industry. 20 tables, 52 illustrations, 5 titles in bibliography.

INTRODUCTION

The opening of the oil and gas-bearing province in western Siberia for an extended period of time established the prospects for the development of the entire oil and gas industry of the Soviet Union. In an unprecedentedly brief space of time, a fuel and power base was created and successfully developed. This fuel and power base is playing a greater and greater role not only in the comprehensive development of this region but also in the growth of the entire country's industrial forces.

The resolutions of the CPSU Central Committee and the USSR Council of Ministers specify the development of western Siberia's oil and gas industry on the basis of the latest achievements of science and technology with the application of the most up-to-date methods of exploiting the oil and gas deposits and drilling wells and with extensive automation of all industrial processes.

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The rapid growth of oil and gas exploitation was insured through the top-priority development of the largest deposits using high-yield wells; through the yearly increase in the volume and pace of drilling operations; through the introduction of efficient systems for the exploitation of oil and gas deposits; through the creative application of methods of maintaining the pressure in the formation; through the industrialization of the drilling for the deposits, etc. From the very beginning of the build-up of the oil and gas industry in western Siberia, a course has been taken toward the total electrification and automation of all industrial processes [3]. Work in these directions was begun simultaneously with the extraction of the first tons of Siberian oil. The most power-intensive consumers are the installations in the system for maintaining the oil reservoir pressure and the pumping stations on the main oil lines.

During the first stage of development of the oil and gas deposits it was seen that it was possible to use commercially produced automation and electrification equipment under conditions found in western Siberia. Operational experience and the results of research have shown, however, that for the reliable operation of automatic devices and electrical equipment at the western Siberian deposits, it is necessary to protect them from the effects of low temperatures.

There was insufficient experience in the industrial operation of electrical equipment under natural climatic conditions similar to those in western Siberia. Thus the necessity came about of arranging a number of scientific research studies which would make it possible to establish more efficient operating conditions for electrical equipment and networks and to determine the level of their operational reliability.

The western Siberian oil and gas-bearing region is territorially demarcated into sufficiently distinct oil and gas provinces. The oil-bearing regions are basically situated on the territory of the central portion of the western Siberian lowlands, between the southern portion of Siberia and the Far North or, more exactly, near the center of the Ob' river region. The gas-bearing regions are located on the territory of the northern portion of western Siberia and the Far North.

The natural climatic and geomorphological characteristics of the western Siberian lowlands caused a number of complicated problems during the development of these regions.

The terrain of the regions is low and heavily covered with swamps. The exception is the natural elevations and watersheds. With respect to their lithographic characteristics, the oil and gas deposits differ little from one another. The difference is seen basically in the thickness of this or that deposit. The depth of occurrence of the explored productive reservoirs is comparatively shallow. For regions along the Urals, well depths are 1,400 to 1,800 m, 800 to 1,400 m in the Far North and 2,100 to 2,600 m for the middle Ob' regions. Good prospects in Tyumenskaya Oblast are associated with the drilling of wells at depths of more than 3,500 m. Over the course of the next decade, drilling depths will not undergo great changes. The average drilling depths for geological exploration in 1980 were 2,810 m, with 2,480 m being the average depth of operational wells.

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With regard to the nature of the terrain and the landscape features, the regions under examination are an integral part of the great erosional-accumulative western Siberian lowland. Terrain features are dictated by the insignificant elevation of the expansive, bowl-shaped lowland over sea level and the entire territory's low degree of drainage. The hydrographic network of the middle Ob' territory is comprised of numerous lakes, canals, meanders, microlakes, swamp rivers, streams and a group of swampy marshes.

A large portion of the oil deposits in the middle Ob' region is located in the flood-land section of the Ob'. Characteristic for the Ob' are heavy summer floods when flood waters submerge huge expanses. The duration of the flooding reaches two months. The climate of the middle Ob' region is acutely continental: it is characterized by a brief, relatively hot summer (maximum air temperature of +35°C in July) and a long, frosty winter (minimum air temperature of -55°C). The frost-free period lasts for 100 to 150 days on the average. The average perennial air temperature of the coldest month (January) is -22°C, while for the hottest (July) it is +19°C. The average annual relative humidity of the air is 76 percent.

With respect to the degree of glaze ice and frost deposits, the middle Ob' belongs to Region I; it belongs to Region II with respect to wind. The average annual precipitation is 400 to 500 mm, the largest part of which (47-48 percent) falls during the warm season (July-August). The abundance of precipitation and the low rate of evaporation create favorable conditions for the formation of swamps and lakes.

Winter in the region is snowy. The depth of the snow mantle reaches a maximum of 30 to 90 cm in March. A stable covering of snow forms by the end of October and remains for 190 to 230 days on the average.

In the system of frost-temperature zoning of the USSR's territory, the middle Ob' region is located in the area of seasonal ground freezing, which begins in October-November and reaches a maximum in March-April. The depth of freezing is 0.2 to 0.6 m in water-saturated peaty soils, 1.2 to 2.5 m in sandy loam and 2.6 to 3.6 m in sand.

The development of the oil and gas-bearing regions of western Siberia entails great difficulties and expense determined by the fast pace of oil and gas extraction as well as by the special natural, geographic and economic conditions. Characteristic of the region are a great density of deposits, the comparatively shallow depth of occurrence of oil and gas-bearing reservoirs, the ease of drilling through rock, high well yield, the feasibility of prolonged gushing, the high quality of oil with a moderate paraffin content and the absence of salts and sulfur.

The swamps and flooding of the oil-deposit territory brought on by high water dictate the application of multiple well drilling and govern the seasonal movement of drilling rigs. Arranging the wells in clusters reduces the cost of drilling foundations, the setting-up and servicing of the wells as well as expenditures for the system of collecting the oil and gas and transporting them.

A considerable reduction in capital and operational expenses under local conditions is achieved through colocating the sites of the field installations. For oil fields, this means the colocation of group measuring equipment (GZU), pumping stations (DNS),

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multiple pumping stations (KNS), complex oil-preparation equipment (UKPN) and transformer substations. In gas fields, this means the colocation of complex gas-preparation equipment (UKPG), compressor stations (KS) and transformer substations. It also means the consolidation of field supply lines-- pipelines, oil lines, gas lines, water lines, electric transmission lines, remote-control lines, communication lines and roads.

Industrial construction methods have received extensive application under the difficult conditions for the construction of oil-field installations and oil and gas transportation facilities on swampy territories. Commercial plant production has been organized for modular unitized installations which make it possible to reduce to a minimum the construction and installation operations at the construction sites. At the same time, the construction costs and the time needed to put the installations into operation have been reduced considerably.

The natural climatic conditions in western Siberia and the very swampy nature of the territories of the oil and gas deposits have had a considerable influence on the solutions to the problems of electrification of these regions: the selection of circuit variants for external power supplies; the design execution of transmission lines and substations; and the selection of the types of electrical equipment and electrical materials used in electrical installations.

All electrical apparatus and electric power equipment installed in the open or in modules made up of sheet metal will one way or another endure the effect of severe climatic conditions. The frequently repeating meteorological extremes--frequent transitions of temperature through 0°C, sharp drops in temperature, the combination of low temperatures and strong winds, prolonged periods of rain and slush, fog, etc.--particularly effect the efficiency of electrical equipment.

There are increased demands being placed on electrical equipment installed in the open. To this type of equipment belong electric motors for rockers, oil pumps and drilling rigs, transformers of various outputs and voltages, substation equipment, etc.

The creation of power supply systems and oil-field electrical equipment elements which are economically efficient under cold climate conditions depends upon how thoroughly one succeeds in considering the operational characteristics and in determining the reliability of electrical equipment.

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ENERGY CONSERVATION

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CONSERVATION OF FUEL RESOURCES IN OIL PROCESSING, PETROCHEMICAL INDUSTRIES

Moscow EKSPLOATATSIYA, MODERNIZATSIYA I REMONT OBOURODOVANIYA V NEFTEPERERABATYVAYUSHCHEY I NEFTEKHIMICHESKOY PROMYSHLENNOSTI in Russian No 2, 1981 pp 2-5

[Article by G. M. Yermolov, USSR Ministry of the Petrochemical Industry]

[Text] A reduction of energy expenditures in the oil refining and petrochemical industries has been a traditional problem of production improvement and is directed both toward a reduction of expenditures and fuel and energy conservation. This is dictated by the fact that oil refining and petrochemistry are not only energy producers but large users as well. Thus, 7 percent of the total refined petroleum was expended in the form of fuel, heat and electric power in 1979 for oil refining and production of petroleum products. The total for direct fuel was 57.3 percent and the total for thermal and electric energy was 33.0 and 9.7 percent, respectively.

A reduction of fuel and energy consumption makes it possible to produce additional petroleum products.

Plans of organization and technical measures for fuel and heat and electric energy conservation and the maximum use of available secondary energy resources are being developed and implemented systematically at enterprises. The main trends of fuel and energy conservation include:

introduction of modern highly productive combination production units (ELOU-AVT-6, LK-6u, L-35-11/1000, EP-300 and so on) and products (monomers, synthetic rubber, ammonia and so on) with lower specific consumption and conversion of production units from operation by the sequential petroleum product refining mode to operation by the "rigid mode" with supply with raw material that excludes superfluous operations on pumping, cooling and subsequent heating (compared to 1980, the consumption of comparison fuel can be reduced by one million tons; the consumption of thermal energy can be reduced by 21,800 TJ, and consumption of electric power can be reduced by 1.5 billion kW h throughout the sector in 1985);

reconstruction of existing production units and products with an increase of their technical and economic indicators by using more improved apparatus and equipment, highly effective catalysts and modern process flow diagrams;

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creation of an intraplant industrial heating system with maximum use of secondary energy resources at large enterprises and reduction of the use of heating plant water from TETs and boiler plants;

an increase of furnace efficiency by improving the monitoring of the fuel combustion conditions and equipping them with utility equipment (utility boilers, air heaters and water economizers);

the use of the chemical heat of low-heat exhaust gas at commercial carbon plants for steam generation in utility boilers and also of the physical heat of the commercial carbon gas mixture for heating the raw material, air and heating system water;

conversion of heating industrial and administrative buildings and of heating pipelines that transport viscous and high-freezing products from steam to hot water;

increasing the efficiency of using secondary energy resources (the heat of contact gases and regeneration gases in synthetic rubber production, gas-liquid flows in oil refining and petrochemistry, the steam from secondary boiling of the condensate and so on);

reducing energy losses in plant heating and electric systems, introduction of alternate-group self-starting of crucial electric motors and so on.

A total of 2 percent of comparison fuel of the total production use was saved during the period 1976-1979 as a result of implementing measures on fuel and energy conservation at enterprises. Data on conservation of fuel and energy resources are presented below compared to the planned norms established per unit of refined raw material or product produced, in percent:

	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>
Fuel	1.38	1.36	2.08	1.65
Thermal Energy	2.30	2.77	2.64	2.07
Electric Power	2.03	2.80	2.95	2.22

Systematic work is being carried out in oil refining and petrochemistry to expand the use of available secondary energy resources. Hundreds of utility boilers are now operating at enterprises of the sector, which permits the use of the physical heat of the waste flue gases of furnaces, contact gases and regeneration gases formed during synthetic rubber production and of pyrogas produced during ethylene production.

Significant work is being carried out on utilizing the heat of heated product flows, the steam heat of secondary condensate boiling and the dead steam of steam turbines and reciprocating pumps. A total of 10.9 percent of the total needs of enterprises of the sector for thermal energy, including 20.2 percent at synthetic rubber plants, was provided in 1979 due to generation of thermal energy in utility plants as a result of increased tension to problems of utilizing secondary energy resources.

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The greatest success in the use of secondary energy resources was achieved by the Mozyr NPZ [Petroleum refining plant], the PO [Production association] Nizhnekamsk-neftekhim, the Novokuybyshev NKhK [Petrochemical combine], the Togliatti PO Sintezkauchuk, the Kremenchug NPZ and the Sterlitamak Synthetic Rubber Plant, which provide their own thermal energy needs at the rate of 30.8, 29.9, 25.4, 21.5, 21.4 and 21.2 percent, respectively, due to the use of secondary resources.

Extensive work has been done by the Yaroslavl' branch of Rezinoprojekt Institute, the PO Tekhnergokhimprom, ENIN [Power engineering institute] imeni G. M. Krzhizhanovskiy, the Belgorod Boiler Building Plant and enterprises of VPO [All-Union Production Association] Soyuztekhnuglerod on development and introduction of utility equipment to burn low-heat exhaust gas ( $1,680-3,360 \text{ kJ/m}^3$ ) with moisture content of more than 40 percent from commercial carbon production. A total of 547,000 tons of comparison fuel was conserved in 1979 by burning this gas. Work on utilization of the exhaust gas has been well set up at the Volgograd, Syzran and Kremenchug commercial carbon plants.

All-Union competitions for the best suggestion on fuel and electric energy conservation, conducted by the VSNTU [All-Union Council of Scientific and Technical Societies] and Gosenergonadzor [State Inspection for Industrial Power Engineering and for Power Engineering Supervision] of Minenergo [Ministry of Power and Electrification] of the USSR and also public inspections of the efficiency of utilizing raw material, materials and fuel and energy resources conducted by Minneftekhimprom [Ministry of the Petrochemical Industry] of the USSR and the Central Trade-Union Committee of Chemical and petrochemical Industry workers, largely contribute to an increase of the efficiency in use of fuel and thermal and electric energy. Thus, more than 220,000 persons who made 60,330 innovation proposals participated in the public inspection of 1979.

More than 48,700 suggestions were implemented during the inspection that made it possible to achieve conservation of material-raw material and fuel and energy resources with 64.8 million rubles. The first prize and presentation of a certificate and the challenge Red Banner of the AUCCTU, Komsomol Central Committee and USSR Gosnab were awarded to the Novopolotsk NPZ imeni 25th CPSU Congress for the results of the public inspection. The Mozyr NPZ, Ufa Commercial Rubber Products Plant imeni M. V. Frunze, the Berdyansk Experimental Petroleum and Oil Plant, the Omsk Synthetic Rubber Plant, the Kirov Tire Plant and the Volgograd Commercial Carbon Plant were awarded certificates of the AUCCTU, the Komsomol Central Committee and USSR Gosnab.

Intrasector inspections for best organization of work on fuel and electric energy conservation are also being carried out. A total of 1,290 suggestions that made it possible to conserve 341,000 tons of comparison fuel, 7,543 TJ of thermal energy and 290 million kW·h of electric energy was introduced during the inspection of 1979 carried out by VPO Soyuznefteorgsintez. The best among enterprises of the VPO Soyuznefteorgsintez were the Syzran, Novopolotsk and Mozyr NPZ. Their achievements were noted by awarding of first, second and third places, respectively, and monetary prizes.

Analysis of energy use by the most energy-consuming plants and production processes and also the periodic seminar schools on exchange of operating experience of

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enterprises to economize in the use of fuel and thermal and electric energy and to increase the efficiency of utilizing secondary energy resources, conducted by the Power Engineering Section of the Scientific and Technical Council of Minneftekhimprom of the USSR, are of significant assistance in a thrifty attitude toward consumption of all types of fuel and energy.

The energy service of the energy and production trust (IPT) Orgneftekhimzavody, which starts up and adjusts boiler plants, production furnaces and thermal systems and adjusts the water-chemical operating modes of electric power plants, industrial boiler plants and utility boilers and also the electrical facilities of enterprises, is of significant assistance in improving the energy management of the sector enterprises.

The Kuybyshev EPNB [Power engineering starting-adjusting brigade] of the IPT Orgneftekhimzavody is successfully adjusting the operating modes of thermal networks and is rendering technical assistance in conversion of heating from steam to hot water. The heat supply was improved significantly as a result of converting users of units 1 and 2 of the Kuybyshev NPZ from steam to hot water, which permitted conservation of 29.4 TJ/year of thermal energy.

The Ryazan' EPNB has developed a device for alternate-group self-starting of electric motors, production of which has been organized by the Ryazan' Experimental-Industrial Plant of the NPO Neftekhimavtomatika. This device makes it possible to eliminate disruptions of the production modes of installations for preliminary oil refining during brief outages of electricity. These devices have been introduced at the Ryazan', Kremenchug, Krasnovodsk and Novopolotsk NPZ. Calculations show that the annual saving from using the self-starting devices at AVT-6 installations exceeds 115,000 rubles.

Work is being carried out at the enterprises with the production of the VNIPIneft' [All-Union Scientific Research and Planning Institute of Petroleum] to increase the degree of heat utilization at AVT and AT installations by selecting the optimum coolant flow rates and of increasing the mean thermal heads in each heat exchanger. A program for calculating the heat transfer modes using computers has been developed at VNIPIneft' for the AVT-3.5 installation. The oil temperature before the K-1 column has been raised to 40-45°C as a result of reframing the existing heat-exchange apparatus, which made it possible to reduce fuel consumption by 14,000 tons, to cut off eight air cooling apparatus with total established power of the electric motors of 560 kW and moreover to increase the productivity of the installation by relieving the "hot jet" furnace of the K-1 column.

Much attention is being devoted at Giprokauchuk [State Planning and Scientific Research Institute of the Synthetic Rubber Industry] to efficient use of secondary energy resources. The institute is continuously working on improving the process flow diagrams and the use of more efficient and economical engineering solutions. Thus, absorption lithium bromide cooling units of type ABKhA-5000 designed for cooling water to 7°C are used extensively in its designs. Secondary energy resources--hot water with temperature of 90 and 95°C produced in the dehydration furnaces, are used as the coolant in these installations. These installations are now in operation at the PO Nizhnekamskneftekhim and at the Sterlitamak Synthetic Rubber Plant. The savings from introducing one installation comprises 80,000

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rubles annually. It is planned to introduce 12 additional ABKhA-5000 installations in 1980-1982.

Schemes for using the heat of the desorbed solvent cooled from 160 to 61°C and also the heat of the secondary steam and condensate at butadiene separation and purification installations by the extractive rectification method, developed by Giprokauchuk, have been introduced at PO Nizhnekamskneftekhim, which permits a saving of 113.4 GJ/hr of thermal energy in a single installation. A similar scheme is operating in the same association at installations for isoprene separation and purification by the extractive rectification method, which utilize the heat of the desorbed extracting agent taken from the stills of the desorption column with temperature of 156°C. An improved scheme for degasification of rubber, developed by Giprokauchuk, has been introduced at the Yefremov Synthetic Rubber Plant, which made it possible to increase product output and also the reduce heat consumption from 34.4 to 31.1 GJ per ton of rubber.

Enterprises of the oil refining and petrochemical industry widely recruit academic and sector scientific research institutes in solution of problems on fuel and energy resource conservation. The Novopolotsk NPZ and the Novopolotsk Polytechnical Institute, the PO Kuybyshevnefteorgsintez and the Tolgliatti PO Sintezkauchuk cooperate closely in this field with the Kuybyshev and Tolgliatti Polytechnical Institutes.

Enterprises of the sector are conducting work to reduce the consumption of electric power in cooling units in cooperation with the Leningrad Production Institute of the Refrigerator Industry. Specifically, the PO Fergananeftorgsintez is working jointly with this institute on sharing of coolant users by the equal temperature boiling curves with simultaneous introduction of pumping schemes for delivery of cooling agent to crystallizers, while the VNIPIenergoprom [All-Union Scientific Research and Planning Institute of the Power Engineering Industry] is conducting work to increase the efficiency of utilizing low-potential heat, including that from use of steam-compressor heat-pumping installations.

Problems of energy resource utilization can be solved most efficiently only provided that the energy schemes of production processes are considered together with technology. A laboratory of energy technology has been created in this regard at VNIPIneft' and an intersector department for raising the qualifications of power engineers and technicians of industrial enterprises and planning organizations for chemical industry technology has been organized at the Kuybyshev Polytechnical Institute.

Recognizing that a thrifty attitude toward consumption of fuel and thermal and electric energy and also maximum use of existing secondary energy resources will contribute to stable support of the oil refining and petrochemical industry with fuel and energy, the industrial associations and enterprises jointly with planning and scientific research institutes have developed plans for organizational and technical measures on conservation of fuel and energy resources during the 11th Five-Year Plan. The knowledge, experience, energy and enthusiasm of sector workers will be directed toward implementing these plans.

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FUELS

UDC 658.3:301:665.6 "1981/1986"

GENERAL OUTLINES OF 11TH FIVE-YEAR PLAN REVIEWED

Moscow EKONOMIKA, ORGANIZATSIYA I UPRAVLENIYE V NEFTEPERERABATYVAYUSHCHEY I NEFTEKHIMICHESKOY PROMYSHLENNOSTI in Russian No 3, 1981 pp 2-4

[Article by S. S. Alekseyev, secretary of the Central Committee of the Chemical and Petrochemical Workers Union : "The Horizons of the 11th Five-Year Plan"]

[Text] "The starting point of the party, political approach to economics has been and still is the immutable program requirement — everything on behalf of the human being, everything for the benefit of human beings," said General Secretary of the CPSU Central Committee Comrade L. I. Brezhnev in his report at the 26th CPSU Congress.<sup>1</sup> As we summarize the results of the 10th Five-Year Plan today, we see again how consistently and purposefully the Leninist Party carries out its policy aimed at a further improvement in the well-being of the Soviet people. A major step forward was made in solving social problems during these five years.

The 10th Five-Year Plan will take a worthy place in the history of the heroic achievements of the Soviet people, who are marching confidently forward to communism. It confirmed the correctness of the economic strategy worked out at the 24th and 25th party congresses, a strategy that aims at a profound change in the economy toward solving the many diverse problems related to improving public well-being.

The following figures show convincingly how much was achieved in the 10th Five-Year Plan. National income rose 400 billion rubles in comparison with the Ninth Five-Year Plan, while the volume of industrial output increased 717 billion rubles and agricultural output rose 50 billion rubles. Four-fifths of national income was used directly for public needs, housing, and sociocultural construction.

Capital investment in the national economy was 635 billion rubles. Fixed capital increased 40 percent. More than 1,200 large industrial enterprises were launched. The production of consumer goods rose 21 percent, including 41 percent for cultural-domestic goods. The assortment of consumer goods was broader and their quality improved.

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<sup>1</sup> PRAVDA 24 February 1981.

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The volume of production of mineral fertilizers, synthetic resins and plastics, chemical fibers and threads, motor vehicle and agricultural tires, products of microbiological synthesis, and consumer goods increased significantly in the past five-year plan.

During these five years 329 billion rubles more than in the Ninth Five-Year Plan was appropriated from national income to raise the standard of living. The average wages of workers and employees for the country as a whole rose more than 15 percent, and in our sectors of industry it is now 183 rubles a month. Payments from public consumption funds rose from 354 rubles per capita in 1975 to 438 rubles in 1980.

Housing with a total area of 530 million square meters was built during the five years and more than 50 million people improved their housing conditions, including 600,000 working people in our sector and members of their families. The network of vacation lodges, sanitariums, children's preschool institutions, and Pioneer camps grew.

Steps were taken to protect the environment, use natural resources rationally, and reproduce them. The sectors of industry covered by our trade union alone spent more than 1 billion rubles for these purposes in the 10th Five-Year Plan.

The principal objective of the 11th Five-Year Plan is to insure further growth in the well-being of the Soviet people on the basis of stable, consistent development of the national economy, switching the economy to the intensive path of development, more rational use of our country's production potential, accelerating scientific-technical progress, conserving all types of resources by every means, and improving the quality of work.

The draft of the CPSU Central Committee for the 26th party congress envisions further development of the entire national economy, which will insure an increase of 18-20 percent in the national income used for consumption and savings needs.

The most important jobs of industry are: more fully meeting economic needs for means of production and public demand for consumer goods; raising the quality of output; and, intensification of production on the basis of allout utilization of scientific-technical advances. An increase in the production and improvement in the quality of goods to meet public demand is considered a paramount task for all sectors of industry, enterprises, and organizations and an object of special concern to party, Soviet, trade union, and economic bodies.

Great importance is attached to the development of the chemical, petrochemical, petroleum refining, and microbiological industries. The total volume of output for these sectors will be roughly 63 billion rubles in 1985 compared to 49.6 billion in 1980. The production of mineral fertilizer will increase to 150-155 million tons, the production of concentrated and mixed mineral fertilizers will be extended, and their quality will improve.



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The production of chemical fibers and threads will rise to 1.6 million tons and the production of synthetic resins and plastics to 6-6.25 million tons. There will be further development of the production of high-grade polymers with assigned technical characteristics, including reinforced and filled plastics. The production of plastic pipe will be increased also.

There will be a rise in the production of synthetic rubber to replace natural rubber. Tire life will be extended, and the production of tires for heavy-duty dump trucks and scrapers will be expanded.

In the petroleum refining industry the efficiency of use of petroleum should be raised with deeper processing and a reduction in losses of petroleum and petroleum products.

Large production facilities for aromatic hydrocarbons, liquid paraffins, ethylene, and petroleum electrode coke are to be incorporated. The production of highly efficient additives to fuels and lubricants will increase.

The quality of petroleum products produced will rise. There will be further standardization of the grades of lubricating oil, greases, and motor and furnace fuels.

In the upcoming five-year plan 2,500 kilometers of petroleum product pipelines, more than 700 new vehicle refueling stations, and 22 petroleum depots will be built.

The scale and pace of the country's economic development is determined in large part by the pace and quality of construction. Capital investment in the national economy during these five years will increase by 12-15 percent. In those sectors of industry covered by the trade union the volume of capital investment in this five-year plan will be more than 70 billion rubles, almost double the previous level. Construction plans envision launching production facilities at the Tobl'sk Petrochemical Combine, the Tomsk Chemical Plant, and the Novopolotskiy Polimir Production Association, as well as phosphorite extraction capacities in the Karatau Basin and Aktyubinskaya Oblast. Construction will be completed at the Chimkent and Chardzhou petroleum refineries and at the second phase of the Mazheykskiy petroleum refinery.

The challenge is being posed of achieving a fundamental improvement in capital construction and raising the efficiency of capital investment. To accomplish this, primary attention is to be focused on insuring timely introduction of fixed capital and production capacities, concentrating resources at the most important projects, directing capital investment on a priority basis to reconstruction and technical-reequipping of enterprises and completion of projects begun earlier, reducing construction time, and improving planning and estimate work.

By the end of the five-year plan labor productivity in the chemical, petroleum refining, and petrochemical industries should rise 28-35 percent. The planned growth in production volume is to be achieved primarily by raising labor productivity.

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During the new five-year plan fuller satisfaction of the growing material and nonmaterial needs of the people and further improvement in the social structure of Soviet society are to be accomplished on the basis of economic growth and raising the efficiency of public production.

It is impossible not to see the scale and truly comprehensive nature of the planned measures. During the 11th Five-Year Plan the interests of all strata of the population and all categories of workers and the uniqueness of living and working conditions in different parts of the country will be thoroughly and carefully considered. The program of social development covers practically all aspects of life, labor, rest, education, and indoctrination of Soviet people.

Further growth in personal income is an important facet of improving well-being. Real per capita income will increase 16-18 percent during these five years. The average monthly wages of workers and employees will rise 13-16 percent to 190-195 rubles by 1985. In addition, payments from public consumption funds will rise 20 percent.

As conditions are created and resources accumulate the minimum wages of workers and employees will gradually be raised, first of all in the production sectors. Regional coefficients to the wages of workers and employees, where they have not already been established, will be instituted in the Urals and certain rayons of Kazakhstan. A supplement will also be established to the wages of workers and employees for continuous work in the southern part of the Far East and Eastern Siberia. The amounts of additional pay for work at night will increase.

A consistent policy will be followed of improving the housing conditions of Soviet people. During the five years a total of 530-540 million square meters of housing space should be put into use. The network of general educational schools, nursery schools, and daycare centers will expand.

There will be further improvement in the working and living conditions of working women. Beginning in 1981 a system of partially paid leave time to care for children until they reach the age of one will be instituted by regions of the country for working women. The minimum amounts of pensions for old age, disability, and loss of a breadwinner will increase.

The Communist Party assigns an important and honorable place in implementation of its social programs to the trade unions, who will put it into effect, as before, in two principal ways. In the first place, trade unions do this by exercising a vigorous influence toward raising public production and labor productivity, accelerating scientific-technical progress, improving the forms of participation by working people in production management, and improving the quality of work in all elements of the national economy by every means. In the second place, this is accomplished when the trade unions expand their functions directly related to improving the well-being and upbringing of Soviet people and making better use of our steadily growing material and other capabilities for these purposes.

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The definitive tasks of the 11th Five-Year Plan are the following:

1. Improving working conditions and support of labor, protection of labor, full development of socialist competition, enhancing the effect of material and moral stimuli on production growth, improving the quality of output, economical use of material resources, and strengthening labor discipline;
2. Improving social insurance, insuring the organization of active and culturally-oriented recreation activities for working people, increasing the network of sanitariums, vacation lodges, and resort hotels, and developing physical training and sports;
3. Creating conditions that are even more favorable for solving one of the principal problems of building communism — shaping the new, broadly developed type of human beings; teaching people a communist attitude toward labor and public property; raising the creative activism of working people, public consciousness, and the level of education, culture, and professional training; strengthening the material base of cultural establishments.

While significantly expanding public funds in the new five-year plan, the party particularly stresses the need to increase their role in solving socioeconomic problems.

Expenditures in the state social insurance budget will increase substantially in 1981-1985. In connection with this the republic, kray, oblast, and city committees of the trade union must see to rational and efficient use of this capital in the interests of best meeting the needs of the working people.

Steps will be taken on a broad front in the 11th Five-Year Plan to improve safety precautions and make working conditions more healthy. This must be closely tied to raising labor productivity and the quality of output and bolstering environmental protection.

The program of economic development and improving public well-being outlined by the CPSU Central Committee is a large one, but entirely realistic. The trade unions must make even fuller use of all their potential to involve working people extensively in practical implementation of this majestic program for the development of Soviet society.

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